EXHIBIT H

MINDSPEED®

PRODUCT BRIEF

M21163

DEVICE OVERVIEW

3.2Gbps 32 Port Reconfigurable Non-Blocking Crosspoint Switch

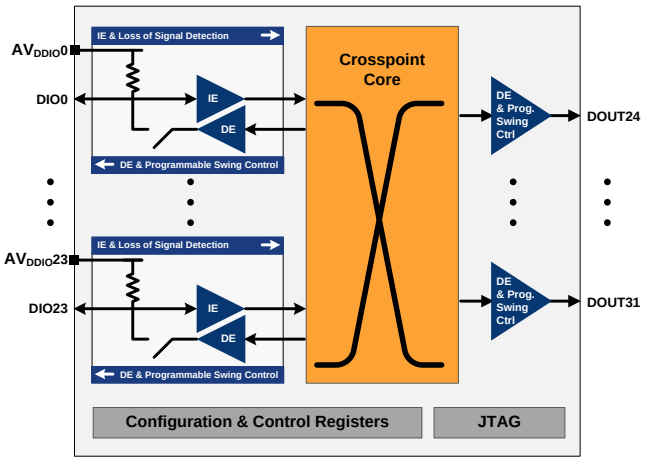
The M21163 is a very low power, reconfigurable, 32 port, non-blocking digital crosspoint switch. The device is optimized for power and performance for data frequencies of up to 3.2 Gbps, including Serial Digital Interface (SDI) video data rates.

The M21163 is designed to provide the designer with the utmost choice and flexibility. With 24 reconfigurable input/output ports and 8 dedicated output ports, it may be used to create any square and non-square matrix size, from 24x8, to 16x16, to 1x31 and every size in between.

The M21163 includes signal conditioning to compensate for losses accumulated across long board traces, making it ideal for high-speed backplane switching applications. Each input/output port features individually programmable trace equalization when configured as an input, and individually programmable de-emphasis and output swing, when configured as an output. The dedicated output ports have individually programmable de-emphasis and swing control.

For lowest power consumption and ease of heat dissipation management, the device may be powered from a single 1.2 V supply. For ease of design and when DC coupling to a voltage other than 1.2 V is desired, the high-speed input and output ports, as well as the digital interface, may be powered from a 1.2 V, 1.8 V, 2.5 V or 3.3 V supply. Furthermore, the input/output ports include on-chip 50 Ω termination and are electrically isolated from one another, allowing each to be powered from and terminated to a different voltage rail. This provides additional flexibility as each port on the device may be DC coupled to upstream and downstream devices with different voltage rails.

The M21163 is offered in a green and RoHS compliant 17 mm x 17 mm, 252-pin, thermally enhanced BGA package.



M21163 Block Diagram

> The M21163 is Ideal For

- Signal switching
- Fanout buffers
- Backplane equalizing and re-driving
- 3G/HD/SD-SDI switchers and routers

TECHNICAL DETAILS

Features	Benefits
8 fixed outputs and 24 reconfigurable IOs	Customized square and non-square matrix size
Per port individually programmable input equalization and output de-emphasis	Compensate for signal losses across various trace lengths
Per port individually programmable output swing control	Optimized power consumption and performance for each application
Per port individual powerdown control	Optimized power consumption for variety of applications
Very low power operation (65 mW per channel @1.2V)	Ease of thermal management and reduced cost of operation
DC and AC coupling at the input and output with integrated level shifter	Design and layout flexibility
Integrated 50Ω input and output termination	Ease of design and layout and improved signal integrity
Loss of Signal detection at the input	Diagnostic and debug feature
Standard 2-wire and 4-wire serial digital interface	Flexible control and configuration
Industrial Operation Temperature range of -40°C to 85°C	Robust Operation under a wide range of conditions

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A		DIO6N	DIO6P	VSS	DIO5N	DIO5P	VSS	DIO4N	DIO4P	VSS	DIO2N	DIO2P	VSS	DIO1N	DIO1P	
B	DIO9P	VSS	AVDDIO6	AVDDIO7	VSS	VSS	AVDDIO5	AVDDIO4	AVDDIO3	AVDDIO2	VSS	VSS	AVDDIO0	AVDDIO1	VSS	DOUT30P
C	DIO9N	AVDDIO9	VSS	VSS	DIO7N	DIO7P	VSS	DIO3N	DIO3P	VSS	DIO0N	DIO0P	VSS	MF3	AVDDO30_31	DOUT30N
D	VSS	AVDDIO8	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	MF4	VSS	VSS	VSS
E	DIO10P	VSS	DIO8P	VSS	VSS	AVDD CORE	AVDD CORE	AVDD CORE	AVDD CORE	AVDD CORE	AVDD CORE	MF5	MF1	DOUT31P	AVDDO30_31	DOUT29P
F	DIO10N	VSS	DIO8N	VSS	AVDD CORE	VSS	VSS	VSS	VSS	VSS	VSS	AVDD CORE	VSS	DOUT31N	VSS	DOUT29N
G	VSS	AVDDIO10	VSS	VSS	AVDD CORE	VSS	VSS	VSS	VSS	VSS	VSS	AVDD CORE	VSS	VSS	AVDDO28_29	AVDDO28_29
H	DIO12P	AVDDIO11	DIO11P	VSS	AVDD CORE	VSS	VSS	VSS	VSS	VSS	VSS	DVDDIO	VSS	DOUT27P	VSS	DOUT28P
J	DIO12N	AVDDIO12	DIO11N	VSS	AVDD CORE	VSS	VSS	VSS	VSS	VSS	VSS	DVDDIO	VSS	DOUT27N	VSS	DOUT28N
K	VSS	AVDDIO13	VSS	VSS	AVDD CORE	VSS	VSS	VSS	VSS	VSS	VSS	AVDD CORE	VSS	VSS	AVDDO26_27	AVDDO26_27
L	DIO13P	VSS	DIO15P	VSS	AVDD CORE	VSS	VSS	VSS	VSS	VSS	VSS	AVDD CORE	VSS	DOUT24P	VSS	DOUT26P
M	DIO13N	VSS	DIO15N	VSS	VSS	AVDD CORE	AVDD CORE	AVDD CORE	AVDD CORE	AVDD CORE	AVDD CORE	MF2	MF0	DOUT24N	AVDDO24_25	DOUT26N
N	VSS	AVDDIO15	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	MF6	VSS	VSS	VSS
P	DIO14P	AVDDIO14	VSS	VSS	DIO16N	DIO16P	VSS	DIO19N	DIO19P	VSS	DIO23N	DIO23P	VSS	MF7	AVDDO24_25	DOUT25P
R	DIO14N	VSS	AVDDIO17	AVDDIO16	VSS	VSS	AVDDIO18	AVDDIO19	AVDDIO20	AVDDIO21	VSS	VSS	AVDDIO23	AVDDIO22	VSS	DOUT25N
T		DIO17N	DIO17P	VSS	DIO18N	DIO18P	VSS	DIO20N	DIO20P	VSS	DIO21N	DIO21P	VSS	DIO22N	DIO22P	

M21163 Pinout

Package (RoHS Compliant)

17mmx17mm 252-pin BGA Package

For more product information, please visit www.mindspeed.com

MINDSPEED

www.mindspeed.com/salesoffices
General Information: (949) 579-3000
Headquarters – Newport Beach
4000 MacArthur Blvd., East Tower
Newport Beach, CA 92660-3007